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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,236	02/25/2002	Takeshi Wada	033211-021	3854

7590

12/11/2006

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EXAMINER

MAGEE, CHRISTOPHER R

ART UNIT

PAPER NUMBER

2627

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/081,236

Applicant(s)

WADA ET AL.

Examiner

Christopher R. Magee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,8,11 and 31-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,8,11 and 31-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, see Remarks, pages 7-12, filed 9/28/2006, with respect to the rejection(s) of claim(s) 1, 8 and 11 under Yanagisawa (US 6,487,045 B1) in view of Novotny (US 6,289,564 B1) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made over Yanagisawa (US 6,487,045 B1) in view of Novotny (US 6,289,564 B1) and further in view of Takeuchi et al. (hereinafter Takeuchi) (US 6,404,109 B1).

Further, the Applicant asserts on pages 9 and 10:

*"Thus, Novotny merely discloses an air gap or space 44 formed between head portion 40 of slider 24 and the remaining portion of slider 24. Nothing in Novotny shows, teaches or suggests a static part coupled with the base as claimed in claim 1. Rather, an air gap cannot be coupled, but merely exists between two elements. Thus, nothing in Novotny shows, teaches or suggests a static part coupled with the base.*

*Furthermore, since air gap or space 44 in Novotny is provided between the head portion of the slider 40 and the remaining portion of the slider 24, nothing in Novotny shows, teaches or suggests a static part formed between movable arms with spaces (i.e., a static part formed between and spaced from the pair of movable arms) as claimed in claim 1. In other words, although the air gap exists between the arms 42a, 42b of Novotny, since it is an air gap it extends totally between the arms and thus is not spaced from the arms."*

*"Finally, Applicants respectfully submit that nothing in Novotny shows, teaches or suggests a base to be fixed to a support means of a head slider and movable arms extending from the base along the air bearing surface as claimed in claim 1."*

The Examiner maintains the Novotny shows (a) a pair of movable arms [42a, 42b] capable of displacing its top end portions in response to a drive signal applied to said actuator section, both of said side surfaces of said head section being fixed to said top end portions of said pair of movable arms, (b) a base [24] to be fixed to a support means of said head slider, said pair of movable arms extending from said base along said air bearing surface, and (c) a static part [40] coupled with said base and formed between and spaced from said pair of movable arms via

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a gap [col. 3, lines 49-52; col. 4, lines 5-11; Fig. 2]. Also, Novotny shows each of the pair of movable arms comprises an arm member [60] , and a piezoelectric element [68] formed on or fixed to a surface of said arm member [Fig. 5, which displays one side of actuator section 42a]. Also, Novotny teaches flexure 22 is connected to an end of head suspension 18, and carries slider 24 (i.e., base) [col. 3, lines 29-31].

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- Claims 1, 8, 11 and 31-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagisawa (US 6,487,045 B1) in view of Novotny (US 6,289,564 B1) and further in view of Takeuchi et al. (hereinafter Takeuchi) (US 6,404,109 B1).

Regarding claims 1, 11, 33 and 35, Yanagisawa discloses a head slider [1] with a precise positioning actuator [14], comprising:

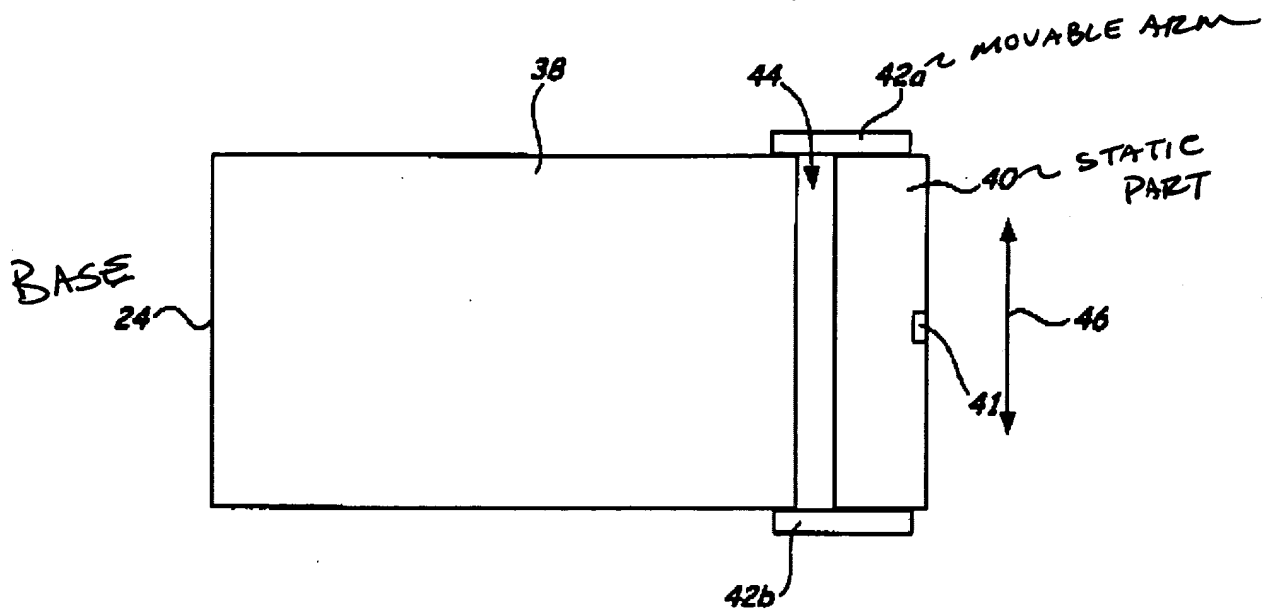
a thin plane shaped head section [not numbered] provided with a first surface that is substantially perpendicular to an air bearing surface of said head slider, a second surface opposite to said first surface, side surfaces perpendicular to said first and second surfaces and at least one head element [12] formed on said first surface;

an actuator section [14] for precisely positioning said at least one head element [col. 8, lines 62-64; Fig. 1]; and

the head element [12] is at least one thin film magnetic head element (i.e., recording/reproducing element) [col. 15, lines 42-43].

Yanagisawa does not exemplify the actuator section including (a) a pair of movable arms capable of displacing its top end portions in response to a drive signal applied to said actuator section, both of said side surfaces of said head section being fixed to said top end portions of said pair of movable arms, (b) a base to be fixed to a support means of said head slider, said pair of movable arms extending from said base along said air bearing surface, and (c) a static part coupled with said base and formed between and spaced from said pair of movable arms.

Novotny shows (a) a pair of movable arms [42a, 42b] capable of displacing its top end portions in response to a drive signal applied to said actuator section, both of said side surfaces of said head section being fixed to said top end portions of said pair of movable arms, (b) a base [24] to be fixed to a support means of said head slider [col. 3, lines 29-31], said pair of movable arms extending from said base along said air bearing surface, and (c) a static part [40] coupled with said base and formed between and spaced from said pair of movable arms via a gap [col. 3, lines 49-52; col. 4, lines 5-11; Fig. 2]. Also, Novotny shows each of the pair of movable arms comprises an arm member [60], and a piezoelectric element [68] formed on or fixed to a surface of said arm member [Fig. 5, which displays one side of actuator section 42a].

**Fig. 2**

In reference to claims 8 and 34, Novotny shows the air-bearing surface formed in the static part [Fig. 3].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the head slider of Yanagisawa with actuator sections affixed to both side surfaces of the head section as taught by Novotny.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to provide the head slider of Yanagisawa with actuator sections affixed to both side surfaces of the head section as taught by Novotny in order to alter the position of the head section with respect to the main portion of the slider body [Novotny; col. 2, lines 3-7].

Further, regarding claims 1 and 33, neither Yanagisawa nor Novotny teaches the arm member made of zirconia. Plus, referring to claims 31, 32, 36 and 37, neither Yanagisawa nor Novotny teaches the base and the static part of the actuator section being made from zirconia. However, Takeuchi teaches the use of ceramics for the movable section 20 and the fixation section 22 as well as the thin plate section 16a, 16b. The most preferred ceramic material used is zirconia [col. 19, lines 43-52; Fig. 1].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the arm member, base and static part of Yanagisawa and Novotny with zirconia as taught by Takeuchi.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to make the arm member, base and static part of Yanagisawa and Novotny with zirconia as taught by Takeuchi because the mechanical strength is large even in the case of thin wall thickness, the toughness is high, and the reactivity with the piezoelectric/electrostrictive layer and the electrode material is small [*Takeuchi*; col. 19, lines 49-52].

### ***Conclusion***

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher R. Magee whose telephone number is (571) 272-7592. The examiner can normally be reached on M-F, 8: 00 am-4: 30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Christopher R. Magee  
Patent Examiner  
Art Unit 2627

December 6, 2006  
crm

  
ANDREA WELLINGTON  
SUPERVISORY PATENT EXAMINER